SOCIETY OF PHYSICS STUDENTS & MATH CLUB event

Evolution, Accelerated: Controlling Noisy Nanoscale Systems, from Quantum Computing to Cancer Therapy

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Abstract: One of the great challenges in modern medicine is the rapid evolution of drug resistant genetic variants, whether in the case of bacterial infections and antibiotics, or metastatic cancer and chemotherapy. There is growing interest in therapeutic strategies that bias the evolutionary trajectories of cellular populations through rationally designed control protocols. One goal would be to vary drug dosage levels and/or drug types to guide the population into genetic states that are known to be maximally susceptible to a particular final treatment. In this talk, we discuss how mathematical approaches first explored in the context of adiabatic quantum computing can help us control the probability distributions of genetic variants over time, potentially facilitating the development of new therapies.

WHERE

SR – 151

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11:30 – 12:20

Thursday, April 25th, 2019